

CLAIMS

1. A unilimb multilumen respiratory circuit comprising first and second conduits, each of said conduits having a proximal and a distal end, wherein said proximal end of said first conduit can be operatively connected to an inlet for respiratory gases and said second conduit can be operatively connected to an outlet for respiratory gases, wherein said first conduit comprises pleated tubing and said second conduit comprises pleated tubing, wherein said first and second conduits meet the flow requirements for spontaneous or assisted ventilation.

2. The circuit of claim 1, wherein said proximal end of said first conduit is connected to said proximal end of said second conduit via a common proximal fitting.

3. The circuit of claim 1, wherein said distal end of said first conduit is connected to said distal end of said second conduit via a common distal fitting.

4. The circuit of claim 1, wherein axial extension or contraction of said distal end of said second conduit causes a corresponding axial extension or contraction of said distal end of said first conduit, wherein upon axial extension of said distal end of said second conduit from a first compressed axial conformation to a second expanded axial conformation, or vice versa, said second conduit will retain said second conformation, and wherein said first conduit will expand or contract in length with corresponding axial expansion or contraction of said second conduit.

5. The circuit of claim 4, wherein said proximal end of said first conduit is connected to said proximal end of said second conduit via a common proximal fitting.

6. The circuit of claim 4, wherein said distal end of said first conduit is connected to said distal end of said second conduit via a common distal fitting.

7. The circuit of claim 5, wherein said distal end of said first conduit is connected to said distal end of said second conduit via a common distal fitting.

8. The circuit of claim 1, wherein axial extension or contraction will adjust the volume therein of at least one of said first or second conduits.

9. The circuit of claim 4, wherein axial extension or contraction will adjust the volume therein of at least one of said first or second conduits.

10. The circuit of claim 7, wherein axial extension or contraction will adjust the volume therein of at least one of said first or second conduits.

11. The circuit of claim 1, wherein the length of said first tube can be longer than said second tube when the length of said first tube is not constrained by mutual connection with said outer tube to said fittings.

12. The circuit of claim 4, wherein the length of said first tube can be longer than said second tube when the length of said first tube is not constrained by mutual connection with said outer tube to said fittings.

13. The circuit of claim 7, wherein the length of said first tube can be longer than said second tube when the length of said first tube is not constrained by mutual connection with said outer tube to said fittings.

14. The circuit of claim 10, wherein the length of said first tube can be longer than said second tube when the length of said first tube is not constrained by mutual connection with said outer tube to said fittings.

15. The circuit of claim 1, wherein the amplitudes or wavelengths of the pleats of said first pleated and second tube are proportional in size.

5 16. The circuit of claim 1, wherein said first and second conduits have resistance to flow of less than about 6 cmH₂O at flow rates of up to about 60 L/min.

10 17. The circuit of claim 2, wherein at least a portion of said first conduit is contained within said second conduit.

18. The circuit of claim 4, wherein at least a portion of said first conduit is contained within said second conduit.

15 19. The circuit of claim 7, wherein at least a portion of said first conduit is contained within said second conduit.

20. The circuit of claim 19, wherein said at least a portion of said first conduit contained within said second conduit is coaxial therewith.

20 21. The circuit of claim 2, wherein said proximal fitting comprises at least two lumens each having filters therein to provide for independent filtration of fluid passing to or from said first and second conduits via said proximal fitting.

25 22. The circuit of claim 4, wherein said proximal fitting comprises at least two lumens each having filters therein to provide for independent filtration of fluid passing to or from said first and second conduits via said proximal fitting.

30 23. The circuit of claim 7, wherein said proximal fitting comprises at least two lumens each having filters therein to provide for independent filtration of fluid passing to or from said first and second conduits via said proximal fitting.

24. The circuit of claim 14, wherein said proximal fitting comprises at least two lumens each having filters therein to provide for independent filtration of fluid passing to or from said first and second conduits via said proximal fitting.

5 25. The circuit of claim 17, wherein said proximal fitting comprises at least two lumens each having filters therein to provide for independent filtration of fluid passing to or from said first and second conduits via said proximal fitting.

10 26. A ventilation or anesthesia system, comprising the unilimb multilumen respiratory circuit of claim 1.

27. A ventilation or anesthesia system, comprising the unilimb multilumen respiratory circuit of claim 2.

15 28. A ventilation or anesthesia system, comprising the unilimb multilumen respiratory circuit of claim 17.

29. A ventilation or anesthesia system, comprising the unilimb multilumen respiratory circuit of claim 20.

20 30. A circuit having an inner tube and an outer tube, said inner and outer tube each having a proximal end connected to a common proximal fitting and each said tube having a distal end connected to a common distal fitting, wherein said outer tube is of fixed length and said inner tube is pleated so that said inner tube can
25 expand and contract in length, wherein said inner tube if not constrained between said distal and proximal fittings by common connection thereto with said outer tube can be axially compressed to a length equal to or less than said fixed length or be axially extended to a length greater than said fixed length.